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| EXAMINER |
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GAKH, YELENA G

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| ART UNIT | PAPER NUMBER |
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1743

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/601,383

Applicant(s)

PUSTERLA ET AL.

Examiner

Yelena G. Gakh, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 06/23/03; 03/07/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. Election of species recited in claim 8, filed on 09/14/06, is acknowledged. Claims 7 and 9 are withdrawn from consideration.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-6 and 8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 of U.S. Patent No. 7,067,800. Although the conflicting claims are not identical, they are not patentably distinct from each other because

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while the gas to be analyzed in the patent is hydrogen or oxygen and the gas to be analyzed in the instant application is helium, the method utilizes the same idea of using a mixture of argon and the gas to be analyzed (hydrogen/oxygen or helium respectively) as a counter-flow gas with specifically defined ratios of flow rates of the gas to be analyzed and the counter-flow gas.

4. Claims 1-6 and 8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 2003/0209664A. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the same reasons as indicated above for US 7,067,800, as the claims of the application 2003/0209664A differ from the claims of the patent in that they additionally recite nitrogen as an optional gas for analysis.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claim 1-6 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites three different embodiments of the inventive method, which makes it unclear, as to which specific embodiment is claimed in claim 1. The embodiments require different experimental set-up and are restrictable as different species. Clarification as to which specific embodiment is recited in the claim is required. The claim further recites two types of a helium gas – the one with impurities, and the other without impurities. It is not apparent, if these different types of the helium gas are obtained from different sources, or from the same source, with purifying a part of the helium gas.

Claim 6 obviously refers to the drawing, which is an improper recitation of the claim. The claim should be recited in a descriptive way, rather than by referring to a drawing. It is not

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apparent from the claim, what the system (10) and lines (11), (12), and (13) are, which renders the claim unclear and indefinite. Where are these lines located? Are they connected to the sources of pure helium and pure argon?

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. **Claims 1-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ketkar et al. (EP 1154268 A2) in view of Nishina et al. (US 6,653,144 B1).

Ketkar teaches "a method for operating an ion mobility spectrometer used to detect trace atmospheric impurities in gases", which eliminates interference from the bulk inert gas by quenching bulk inert gas ions during analysis when mixing the bulk gas (e.g. N₂) with the

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reagent gas (e.g. Ar) (see Title, Abstract and col. 3, [0017]). A drift gas is conventionally a purified sample gas, i.e. the bulk inert gas, see col. 5, [0028]. Thus adding Ar to a sample gas or a drift gas quenches N_2 ion clusters and allows analyzing impurities in N_2 . In one of the embodiments pure argon is used as a drift gas, see col. 7, [0038].

Ketlar does not teach a method for detecting impurities specifically in a helium gas with various combinations of helium and argon used as a sample and a drift gases.

While the disclosure of US 6,653,144 is an obvious translation from the original Japanese document and therefore is not always clear, it can be understood that Nishina teaches a method for detecting ultra small quantities of impurities in He gas by mixing a purified sample gas with Ar gas in 0-50% amount, see col. 7, lines 38-40, and using different combinations of He and Ar as sample and drift gases.

It would have been obvious for any person of ordinary skill in the art to expand Ketkar's method to detecting trace impurities in helium gas, as taught by Nishima, because both Ketkar and Nishima demonstrate improving detection capabilities and selectivity of ion mobility spectrometry by adding a reagent gas (argon) to a sample gas (helium) for up to 50% of Ar concentration and using as a drift gas pure helium (which is a conventional drift gas when the sample gas is helium with impurities), or pure argon, as taught by Ketkar, or the same mixture of helium and argon, as the one comprising impurities, but purified, again according to conventional usage of a purified sample gas (which is now a mixture of helium and argon), because both Ketkar and Nishima demonstrate that formation of ion clusters of the bulk gas (helium) with reaction argon gas shifts ion mobilities of the bulk gas and thus allows detecting trace impurities, which otherwise are hindered by the ions of the bulk gas.

Nishima indicates: "the composition (mixed ratio) or the added amount of the purified gas to be added to the outflowed gas, can be set according to the main components of the sample gas, the impurities to be analyzed, the kinds of main purified gas and the sub-purified gas and the like. In the above example, the mixed ratio can be selected by properly setting the flowing amount from both the mass flow controllers (40, 41)" (col. 6, lines 51-59). This statement provides obviousness for any person of ordinary skill in the art to optimize the ratio of argon and helium in the gas mixtures, as well as the ratio of their flow rates recited in claims 2-5.

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Providing a purified counter-flow gas from the same source as the sample gas by separating the sample gas into two portions, one of which is passed through the purifier is a conventional analytical technique.

11. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ketkar in view of Nishina, as applied to claims 1-6 above, and further in view of e.g. Kitahara et al. (US 5,194,933).

While Ketkar in view of Nishina do not specifically disclose a purifier based on nickel, purification of helium and argon gases based on nickel is well known in the art, as taught e.g. by Kitahara: "highly purified rare gas (helium, neon, argon, krypton, xenon, etc.) is obtained by removing impurities contained therein, such as nitrogen, hydrocarbon, carbon monoxide, carbon dioxide, oxygen, hydrogen and water, at relatively low temperatures by the use of a getter. This getter is a two-component alloy of zirconium and vanadium, or a multi-component alloy containing, as well as zirconium and vanadium, at least one of chromium, **nickel** and cobalt" (Abstract).

Therefore, it would have been obvious for any person of ordinary skill in the art to purify helium or helium/argon mixture using nickel as one of the components of metal alloys, because e.g. Kitahara teaches efficient purification of rare gases, including helium, using getters, which comprise nickel along with other metals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10/29/06



**YELENA GAKH
PRIMARY EXAMINER**